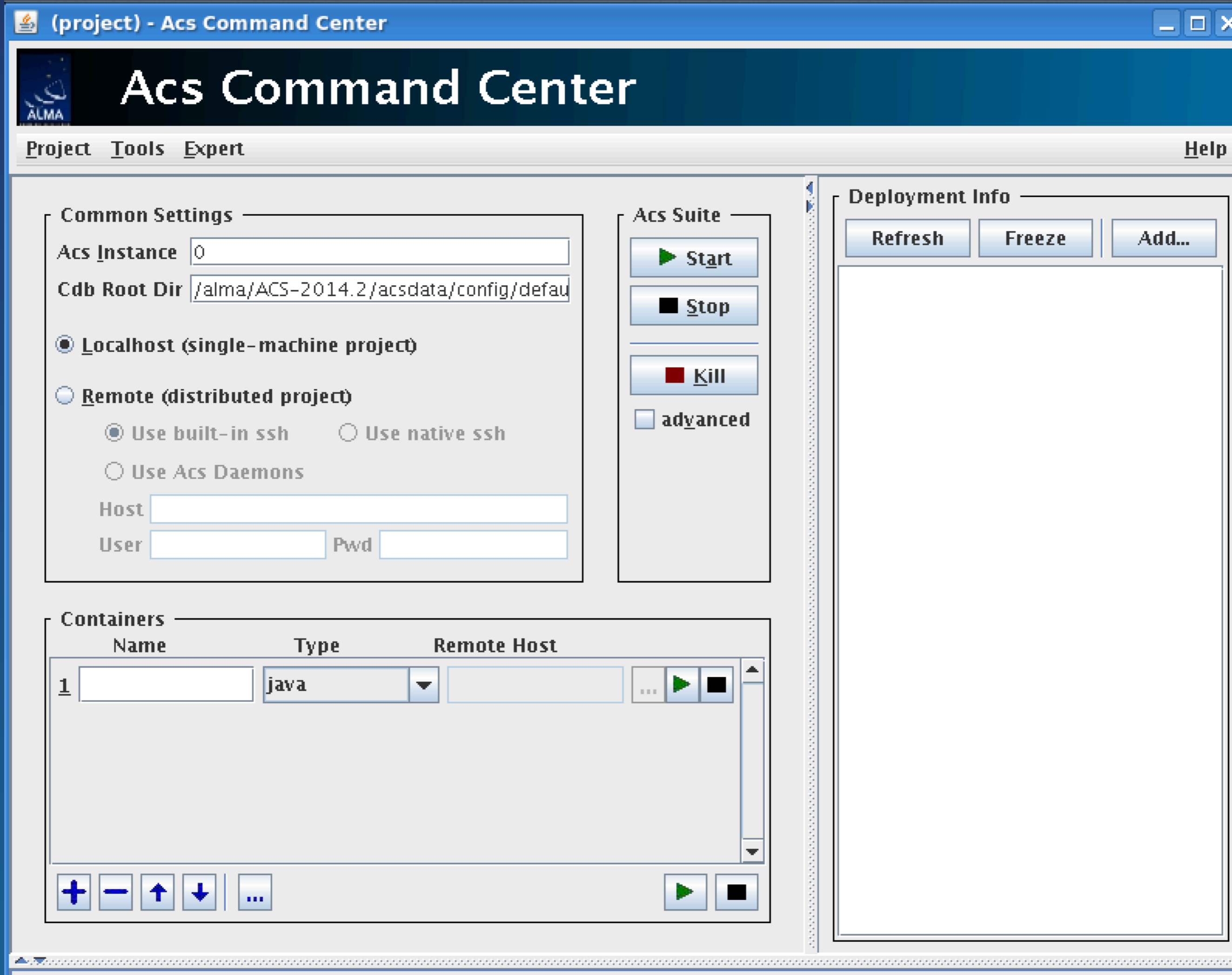




ALMA Common Software Basic Track

A walk through ACS functionality





The screenshot shows the ACS Command Center web interface. The window title is "(project) - Acs Command Center". The main header is "Acs Command Center" with a menu bar containing "Project", "Tools", "Expert", and "Help".

Common Settings

- Acs Instance:
- Cdb Root Dir:
- Localhost (single-machine project)
- Remote (distributed project)
 - Use built-in ssh
 - Use native ssh
 - Use Acs Daemons
- Host:
- User: Pwd:

Acs Suite

-
-
-
- advanced

Containers

	Name	Type	Remote Host	
1	<input type="text"/>	java	<input type="text"/>	<input type="button" value="..."/> <input type="button" value="Start"/> <input type="button" value="Stop"/>

Bottom controls:

Deployment Info

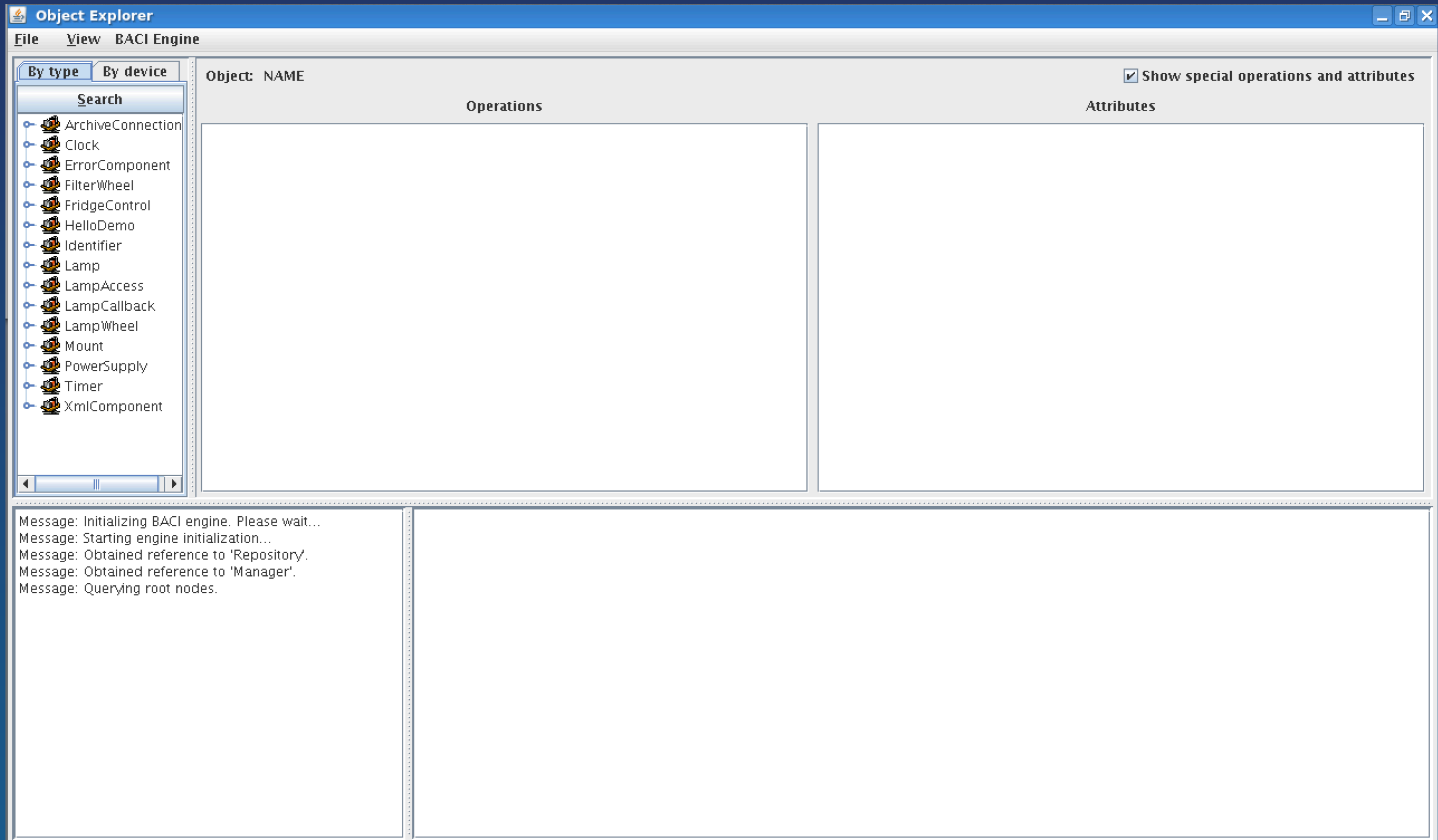
-
-
-



- ✧ Every application needs a set of **core** integration infrastructure services, like for instance:
 - ✧ messaging (request/response and publish/subscribe)
 - ✧ logging
 - ✧ error management
 - ✧ alarms
 - ✧ configuration data
- ✧ In ACS these services have been identified as essential for the application domain
- ✧ These have been implemented mostly on top of standard CORBA Services (DDS may replace CORBA in some/several of them)
- ✧ The ACS work consists in wrapping the implementation to simplify their usage by the application developers
- ✧ The following slides will present some of services provided by the ALMA Common Software



- ✧ Enables the communication between system components
- ✧ Supports both request-response and publish-subscribe message patterns
 - ✧ anonymous publish/subscribe data transfer is seen more and more as a key need for the messaging system
- ✧ In ACS:
 - ✧ CORBA messaging provides request-response
 - ✧ CORBA Notify Service provides publish-subscribe
 - ✧ DDS can replace the Notify Service offering many advantages



The screenshot shows the 'Object Explorer' application window. The title bar reads 'Object Explorer' and the menu bar includes 'File', 'View', and 'BACI Engine'. On the left, there are two tabs: 'By type' (selected) and 'By device'. Below these is a search box and a list of object types: ArchiveConnection, Clock, ErrorComponent, FilterWheel, FridgeControl, HelloDemo, Identifier, Lamp, LampAccess, LampCallback, LampWheel, Mount, PowerSupply, Timer, and XmlComponent. The main area is divided into three sections: 'Object: NAME' (with a search field), 'Operations', and 'Attributes'. A checkbox labeled 'Show special operations and attributes' is checked. At the bottom left, a message log displays the following text: 'Message: Initializing BACI engine. Please wait...', 'Message: Starting engine initialization...', 'Message: Obtained reference to 'Repository'.', 'Message: Obtained reference to 'Manager'.', and 'Message: Querying root nodes.'



Messaging tools: event browser



ALMA ACS Event Browser

Event Browser Help

Notify Service Summary Channel Tree

Notify Service	#cons	#suppliers
Alarm	0	0
Archive	0	0
DefaultNotifySer	0	0
Logging	0	0

Event List Archiving List Event type filter:

Timestamp	Event source	# Eve	Event type	# Events this type
-----------	--------------	-------	------------	--------------------

Event Details

Name	Type	Value
------	------	-------

Refresh service data to get correct supplier/consumer info.



Logging system



- ✧ Logging is fundamental for the operation of distributed systems, in order to understand and keep track of what happens between concurrent components
- ✧ Logging is used to publish any kind of status and diagnostic information for interested clients and for archival
- ✧ The current implementation is based on the Notification Service
- ✧ There is also a prototype implementation based on DDS



Logging tools: jlog logging client



LoggingClient - Online

File View Search Drill down Expert

Log level: **Info** Discard level: **Debug** **Pause** **Clear logs** **Filters** **Drill down**

← ↑ ↓ → ↻ Search...

TimeSt...	Entry Type	Source Ob...	Log Message
22:04:09...	Info	Manager	Request for component 'curl:///NameService' issued.
22:04:09...	Info	Manager	Component 'curl:///NameService' provided.
22:04:09...	Info	Manager	ORB status: connectionThreadsUsed=0%, lost calls=0,

Detailed info

LogField	Value
TimeStamp	
Entry Type	
Source Object	
File	
Line	
Routine	
Host	
Process	
Context	
Thread	
Log ID	
Priority	
URI	
Stack ID	
Stack Level	
Log Message	
Audience	
Array	
Antenna	

100K Engine not filtered Table not filtered Engineer



- ✧ Provides a unified way of dealing with errors through the system
- ✧ CORBA supports “distributed” exceptions
- ✧ The ACS Error System provides additionally the following features:
 - ✧ Error format standardisation
 - ✧ Error handling design patterns
 - ✧ Error trace
 - ✧ Error logging
 - ✧ Synchronous and asynchronous error handling
 - ✧ Error browsing and definition tools



Alarm System



- ✧ Deals with **abnormal** situations
 - ✧ Fault states (FS)
 - ✧ Range from severe alarms to warning states
- ✧ Provides
 - ✧ FS collection, analysis and distribution, definition and archiving
 - ✧ FS reduction
 - ✧ Dedicated alarm consoles
- ✧ The ACS alarm system is a porting of the CERN LASER system



Configuration Database



- ✧ The ACS Configuration Database (CDB) addresses: defining, accessing and maintaining the configuration of a system
- ✧ For each component in the system, there might be a set of static (or quasi-static) configuration parameters that have to be configured in a persistent store and read when the component is started up or re-initialized.
- ✧ This includes the “deployment structure” of the system, i.e., which statically deployed Components are part of the system and their inter-relationships
- ✧ This information is used by the component/container infrastructure in runtime



Configuration Database Browser



Configuration Database Browser

File Edit Administration

Refract CDB Tree

CURRENT LOCATION: /root/MACI/Containers/bilboContainer

Save Changes to XML record

Reset Data

Table View XML View

ATTRIBUTE NAME	ATTRIBUTE VALUE
DALtype	DAL
ImplLang	cpp
ManagerRetry	10
Recovery	true
ServerThreads	5
Timeout	20.0
UseIFR	1
xmlns	urn:schemas-cosylab-com:Container:1.0
xmlns:baci	urn:schemas-cosylab-com:BACI:1.0
xmlns:cdb	urn:schemas-cosylab-com:CDB:1.0
xmlns:log	urn:schemas-cosylab-com:LoggingConfig:1.0
xmlns:xsi	http://www.w3.org/2001/XMLSchema-instance



Sampling System



- ✧ Sampling of any Property
- ✧ High sustained frequency
- ✧ Optimized data transport
- ✧ Simultaneous sampling
- ✧ Plotting GUI

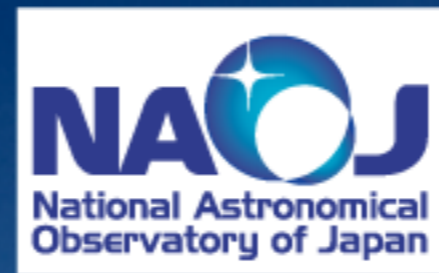


Component simulation



- ✧ Why simulation?
 - ✧ Distributed development
 - ✧ Features or entire subsystems not yet available
 - ✧ Test a subsystem in isolation
- ✧ Simulation of Components from IDL interface specification
- ✧ Dumb default or “intelligent” simulation

Questions?



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